

CLAIMS

1. An encoder (100) for encoding a sequence of pictures as a plurality of block transform coefficients to meet network traffic model restrictions, the encoder comprising an iterative loop for selecting one of a plurality of quantization parameter values for each picture.

2. An encoder as defined in Claim 1, the iterative loop comprising:  
pre-encoding means for pre-encoding the sequence of pictures for each of a plurality of quantization parameter values;

selecting means for selecting for each picture of the sequence one of the plurality of quantization parameter values responsive to the quantization parameter values and bitrate operating points of the neighboring pictures in the sliding time window; and

pre-encoding means for encoding each picture of the sequence using the quantization parameter value selected for that picture.

3. An encoder as defined in Claim 2 wherein the quantization parameter value selected for a sliding window encodes a window's worth of pictures at about a target picture rate.

4. An encoder as defined in Claim 2 wherein the quantization parameter value selected for a sliding window encodes a window's worth of pictures at about a target bitrate.

5. An encoder as defined in Claim 2 wherein the quantization parameter values selected for each picture in the video sequence and for the neighboring pictures in the same time window as the given picture are chosen to encode the pictures to be transmitted within a time window of preset duration to be encoded within a target number of bits.

6. An encoder as defined in Claim 2 wherein the sequence of video pictures comprises a group of pictures.

7. An encoder as defined in Claim 2 wherein the sequence of video pictures comprises pre-stored video content.

5 8. An encoder as defined in Claim 2 wherein a portion of sequence of video pictures to be transmitted within a preset time duration meets a network traffic model restricting the number of bits to be transmitted within the preset time duration.

10 9. An encoder as defined in Claim 2 wherein the selecting means for selecting one of the plurality of quantization parameter values for each picture of the video sequence comprises multi-pass encoding means to optimize the quantization parameter value selected to encode each picture.

15 10. An encoder as defined in Claim 2 wherein the pre-encoding means for pre-encoding the sequence of pictures for each of the plurality of quantization parameter values comprises means for re-using motion vector values.

20 11. An encoder as defined in Claim 1 in combination with a decoder (300, 400) for decoding encoded block transform coefficients that meet network traffic model restrictions to provide reconstructed pixel data, the decoder comprising a variable length decoder (310) for decoding video data corresponding to a time window of preset duration according to a network traffic model.

25 12. A codec comprising an encoder as defined in Claim 1, and a decoder (300, 400) for decoding encoded block transform coefficients that meet network traffic model restrictions to provide reconstructed pixel data, the decoder comprising a variable length decoder (310) for decoding video data corresponding to a time window of preset duration according to a network traffic model.

13. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform program steps for performing video rate control to meet network traffic model restrictions, the program steps comprising:

5 pre-encoding the sequence of pictures for each of a plurality of quantization parameter values;

selecting for each picture of the sequence one of the plurality of quantization parameter values responsive to the quantization parameter values and bitrate operating points of the neighboring pictures in the sliding time window; and

10 encoding each picture of the sequence using the quantization parameter value selected for that picture.

14. A method of performing video rate control on a sequence of pictures to meet network traffic model restrictions, the method comprising:

15 pre-encoding the sequence of pictures for each of a plurality of quantization parameter values;

selecting for each picture of the sequence one of the plurality of quantization parameter values responsive to the quantization parameter values and bitrate operating points of the neighboring pictures in the sliding time window; and

20 encoding each picture of the sequence using the quantization parameter value selected for that picture.

15. A method as defined in Claim 14 wherein the sequence of pictures comprises a sequence of video frames.

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16. A method as defined in Claim 14 wherein the quantization parameter value selected for a sliding window encodes a window's worth of pictures at about a target bitrate.

17. A method as defined in Claim 14 wherein the quantization parameter values selected for each picture in the video sequence and for the neighboring pictures in the same time window as the given picture are chosen to encode the pictures to be transmitted within a time window of preset duration to be encoded  
5 within a target number of bits.

18. A method as defined in Claim 14 wherein the sequence of video pictures comprises a group of pictures.

10 19. A method as defined in Claim 14 wherein the sequence of video pictures comprises pre-stored video content.

20. A method as defined in Claim 14 wherein a portion of the sequence of video pictures to be transmitted within a preset time duration meets a network traffic  
15 model restricting the number of bits to be transmitted within the preset time duration.

21. A method as defined in Claim 14 wherein selecting one of the plurality of quantization parameter values for each picture of the video sequence comprises using multi-pass encoding techniques to optimize the quantization parameter value  
20 selected to encode each picture.

22. A method as defined in Claim 14 wherein pre-encoding the sequence of pictures for each of the plurality of quantization parameter values comprises re-using motion vector values.  
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